

Ref: 02598-05001-32009

May 4, 2006

Mr. Floyd Wiggins Wiggins Enterprises, Inc. 1370 Airport Boulevard Santa Rosa, CA 95403

Re: Groundwater Monitoring and Sampling Report – First Quarter 2006, Wiggins Property, 3454 Santa Rosa Avenue, Santa Rosa, California, SCDHS-EHD Site # 00001849, NCRWOCB Site # 1TSR007

Dear Mr. Wiggins:

This report presents the results of Winzler & Kelly Consulting Engineers' (Winzler & Kelly's) groundwater monitoring and sampling activities performed on February 7, 2006, and an update of the ozone system operation, at 3454 Santa Rosa Avenue (site), Santa Rosa, California (Figures 1 and 2). Winzler & Kelly performed the work in accordance with the April 18, 2005 letter from the Sonoma County Department of Health Services, Environmental Health Division (SCDHS-EHD), which requested quarterly monitoring and sampling of monitoring wells in addition to sampling of domestic wells located in the vicinity of the site.

#### FIRST QUARTER 2006 GROUNDWATER MONITORING AND SAMPLING ACTIVITIES

The Site-Specific Sampling Procedures, provided in Appendix A, describe in detail all of the monitoring and sampling activities that were performed at the site on February 7, 2006. A brief summary of these activities is also provided below.

Personnel Present: Winzler & Kelly's technicians, Pon Xayasaeng and Brian Bacciarini,

performed the groundwater monitoring and sampling activities.

**Dissolved Oxygen:** A calibrated dissolved oxygen (DO) meter was used to measure the

concentrations of DO in monitoring wells MW-5 through MW-12 while

the ozone system was operating.

Depth-to-Water: An electronic water level meter was used to measure the depth-to-

groundwater (DTW) in each monitoring well while the ozone system was operating. DTW was measured in each well after allowing the

groundwater to equilibrate for approximately 30 minutes.

**Purging:** An electronic 12-volt submersible pump was used to purge monitoring

wells MW-5 and MW-8 through MW-12 until the indicator parameters

stabilized.



Domestic wells were purged by running the tap closest to the well system's pressure tank until the well pump switched on.

Monitoring Well Sampling: Groundwater samples were collected from monitoring wells MW-5 and

MW-8 through MW-12. New disposable bailers were used to collect and transfer the groundwater samples from each monitoring well into the appropriate, laboratory-supplied, certified clean sample containers.

**Domestic Well Sampling:** Prior to collecting groundwater samples from the domestic wells, well

owners were notified of the sampling event. Groundwater samples were collected from the domestic wells located at 3415 (DW-3415), 3450 (DW-3450), 3455 (DW-3455), and 3521 (DW-3521) Santa Rosa

Avenue.

Chemical Analysis: Analytical Sciences Laboratory (Analytical Sciences) of Petaluma,

California (a California-certified laboratory) analyzed each of the groundwater samples collected from the monitoring wells for total petroleum hydrocarbons as gasoline (TPH-G), as diesel (TPH-D), and as motor oil (TPH-MO) by EPA Method 8015M, and for benzene, toluene, ethyl benzene, and total xylenes (BTEX), acetone, and oxygenated fuel

additives by EPA Method 8260B.

Groundwater samples collected from the domestic wells were analyzed

for TPH-G, BTEX, and oxygenated fuel additives.

As part of the ozone remediation monitoring, specific groundwater samples were analyzed for hexavalent chromium (Cr<sup>+6</sup>) by EPA Method 7196A, for bromate (BrO<sub>3</sub><sup>-1</sup>) and bromide (Br<sup>-1</sup>) by EPA Method 300 (IC), and for molybdenum (Mo), selenium (Se), and vanadium (V) by

EPA Method 6010B.

#### GROUNDWATER MONITORING AND SAMPLING RESULTS - FEBRUARY 7, 2006

The groundwater elevation data at the site is summarized in Table 1. The historic groundwater gradient and flow direction is presented on Table 2. A groundwater elevation map is provided as Figure 3. As mentioned in Winzler & Kelly's March 10, 2006 *Annual Groundwater Monitoring and Sampling Report Including Fourth Quarter 2005*, when the groundwater is aerated, the density of groundwater decreases from 1.0 g/cm³ to less than 1.0 g/cm³; therefore, the groundwater flow direction cannot be calculated. The groundwater elevation anomaly is not mounding, but is a result of less dense groundwater produced by intermitted ozone and air injections. Historically, the groundwater flow is towards the southeast.

On February 7, 2006, DO concentrations measurements ranged from 1.57 to 14.94 mg/L. The highest DO concentration was detected in MW-10 at 14.94 mg/L. DO is a byproduct of the ozonation process, which aids in the degradation of petroleum hydrocarbons. The DO results are summarized in Table 3.



During purging activities, the parameters of pH, conductivity, temperature, and oxidation-reduction potential were monitored in the groundwater extracted from the wells. A summary of these indicator parameters is provided in Table 3. In addition to monitoring these parameters, MW-10 was monitored for the presence of free product using a clear PVC bailer. Droplets of free product were detected during visual inspection and most likely due to the seasonal high water level contacting any residual hydrocarbons that may be present in the vadose zone. The hydrocarbon adsorbent-hydrophobic sock was removed from MW-10 and weighed. Approximately 13 ounces of free product was quantified from MW-10. After purging and sampling, a new hydrocarbon adsorbent-hydrophobic sock was installed in MW-10. A measurable quantity of free product was not detected in any of the other monitoring wells that were sampled.

Laboratory analysis of the groundwater samples collected from monitoring wells MW-8, MW-9, MW-11, MW-12, and the domestic wells did not quantify any petroleum-related constituents above the laboratory's reportable detection limits (RDLs). Only the groundwater samples collected from monitoring wells MW-5 and MW-10 reported petroleum-related constituents above the laboratory's RDLs. The detections of TPH-G in MW-5 at 280  $\mu$ g/L and MW-10 at 7,600  $\mu$ g/L during the February 7, 2006 sampling event, are generally decreasing compared to historic sampling events. TPH-D was reported only in MW-10 at a concentration of 77,000  $\mu$ g/L. TPH-D concentrations in MW-10 may be the result of droplets of product being incorporated into the analyzer by the laboratory.

The analytical results of the groundwater samples are summarized in Table 4. Figure 4 depicts the concentrations of TPH-G, benzene, and methyl-tert butyl ether (MTBE) in the groundwater samples collected from the monitoring wells on February 7, 2006.

Additionally, groundwater samples collected from monitoring wells MW-5 and MW-8 through MW-12 were analyzed for ozonation process by-product related constituents (Cr<sup>+6</sup>, BrO<sub>3</sub><sup>-1</sup>, Mo, Se, and V). Analytical results did not quantify any of these constituents above the laboratory's RDLs. Table 5 presents the analytical results of the ozone sparging parameters.

Acetone was not detected above the laboratory's RDLs in any of the groundwater samples. Bromide was reported in the specific wells sampled (MW-5 and MW-8 through MW-12). As mentioned in Winzler & Kelly's November 9, 2005 *Quarterly Groundwater Monitoring and Sampling Report – Third Quarter 2005*, bromide is commonly found in groundwater and is not a by-product of the ozonation process.

The laboratory QA/QC included the use of method blanks to exclude false-positive analyses and the use of laboratory control samples to evaluate the percentage recovery of known analyte spikes. The recovery percentages for each of the sample analytes were within acceptable ranges. The complete laboratory reports, QA/QC data, and the chain-of-custody form are included in Appendix B.

#### REMEDIAL SYSTEM UPDATE

As of March 9, 2006, the ozone system has been operating for approximately 252 days. The current total ozone injection rate at the site is approximately 1.4 lbs/day; therefore, a total of 353 lbs of ozone has been injected at the site as of March 9, 2006. Based on the February 7, 2006 analytical results, sparge point SP-7 was deactivated and SP-9 was activated on March 9, 2006. The table below shows operating dates for each sparge point.



Sparge Point ID	Operating Dates	Sparge Point ID	<b>Operating Dates</b>
SP-1	6/7/05-Present	SP-7	12/15/05-3/9/06
SP-2	6/7/05-12/15/05	SP-8	6/7/05-Present
SP-3	6/7/05-Present	SP-9	3/9/06-Present
SP-4	6/7/05-Present	SP-10	6/7/05-Present
SP-5	6/7/05-Present	SP-11	Never Operated
SP-6	6/7/05-Present	SP-12	Never Operated

#### GEOTRACKER DATA ENTRY

As required by Assembly Bill AB2886, Winzler & Kelly has uploaded the *Annual Groundwater Monitoring and Sampling Report Including Fourth Quarter 2005*, the fourth quarter 2005 analytical EDF report, and the first quarter 2006 groundwater well measurement file and analytical EDF report to the GeoTracker database. Upload verification forms are included in Appendix C. Winzler & Kelly will submit this report to the GeoTracker database upon completion.

#### CONCLUSIONS AND RECOMMENDATIONS

Petroleum hydrocarbon constituents were only detected in monitoring wells MW-5 and MW-10 and consistent with historic data, higher concentrations were quantified in MW-10. TPH-G concentrations in these wells are generally decreasing since the installation and start-up of the ozone system (June 7, 2005). TPH-D was only detected in MW-10 and concentrations show an increase compared to previous sampling results. This increase is expected because agitation from the ozone/air injections in combination with high water levels has desorbed residual TPH-D in the vadose zone. Once TPH-G concentrations have significantly been reduced, TPH-D concentrations are expected to also decline.

Winzler & Kelly recommends the continuation of quarterly groundwater monitoring and sampling at the site. The second quarter 2006 groundwater monitoring event is schedule for in May 2006.

No. 2132

CERTIFIED ENGINEERING

Should you have any questions or comments regarding this project, please contact David Vossler, Project Manager, at (707) 523-1010.

Sincerely,

WINZLER & KELLY

Pon Xayasaeng

Environmental Engineer

Kent O'Brien, PG, CEG Senior Project Geologist



#### Attachments

#### Figures:

Figure 1 – Location Map

Figure 2 – Site Map

Figure 3 – Groundwater Elevation Map

Figure 4 – Petroleum Hydrocarbons in Groundwater

#### Tables:

Table 1 – Water Level Data

Table 2 – Groundwater Gradient and Flow Direction

Table 3 – Indicator Parameters

Table 4 – Analytical Results of Groundwater Samples

Table 5 – Additional Groundwater Analytical Results

#### Appendices:

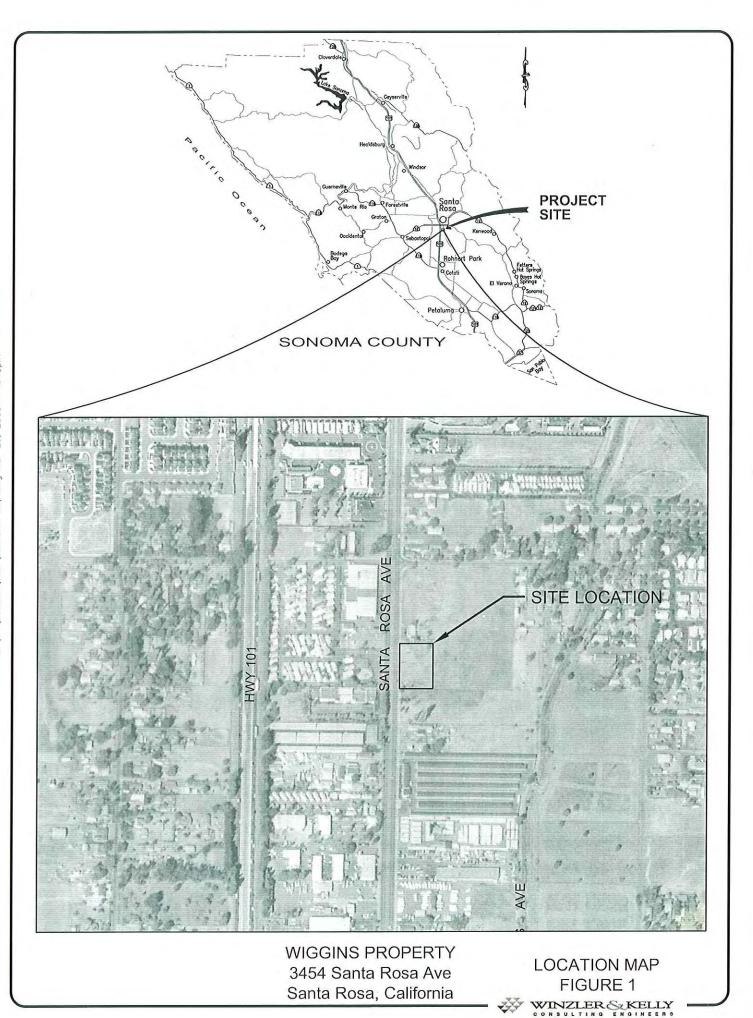
Appendix A – Site-Specific Sampling Procedures

Appendix B – Analytical Laboratory Report

Appendix C – GeoTracker Upload Verifications

c: Mr. Cliff Ives, Sonoma County Department of Health Services, Environmental Health Division, 475 Aviation Boulevard, Suite 220, Santa Rosa, CA 95403





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# **Table 1. Water Level Data**

Wiggins Property 3454 Santa Rosa Avenue, Santa Rosa, CA

Well ID	Date	Groundwater Elevation	Depth-to- Water	Top of Casing	Free Product Thickness	Screen Interval	Sand Pack Interval	Bentonite/ Grout Interval
MW-1 TI	HROUGH MW-4	MSL HAVE REEN		t bgs		10	eet	
14144-1 11	IKOUGII WIW-4	HAVE BEEN F	ADANDONED					
MW-5	02/02-12/18/00	Inacce	essible	105.89		5'-20'	4'-21.5'	0'-4'
	03/08/01*	101.28	4.61					
	04/05/01*	99.28	6.61					
	07/06/01*	94.89	11.00					
	10/08/01*	91.92	13.97					
	1/15/02*	101.28	4.61					
	04/08/02*	99.78	6.11					
	08/15/02*	94.59	11.30					
	11/26/02*	95.23	10.66					
	02/26/03*	100.91	4.98					
	05/20/03*	100.73	5.16	_				
	09/24/03*	95.22	10.67					
	04/29/04	99.64	6.25	_	a			
	07/29/04	96.64	9.25	4	a			
	03/02/05	102.34	3.55	4	a			
	05/12/05	101.88	4.01	4	a			
	8/9/05†	98.63	7.26	1	a			
	11/21/05	97.63	8.26	1	a			
	02/07/06	101.83	4.06		a			
MW-6	02/02/00*	101.29	5.19	106.48		5'-20'	4'-21.5'	0'-4'
	05/04/00*	101.47	5.01					
	08/03/00*	96.97	9.51	1				
	12/18/00*	96.17	10.31					
	03/08/01*	102.17	4.31					
	04/05/01*	101.49	4.99					
	07/06/01*	97.29	9.19					
	10/08/01*	94.22	12.26					
	01/15/02*	103.52	2.96					
	04/08/02*	101.65	4.83					
	08/15/02*	96.61	9.87					
	11/26/02*	96.04	10.44					
	02/26/03*	102.76	3.72					
	05/20/03*	101.90	4.58	_				
	09/24/03*	96.87	9.61	_				
	04/29/04	100.72	5.76	_	a			
	07/29/04	97.57	8.91		<sup>a</sup>			
	03/02/05	105.03	1.45	_	<sup>a</sup>			
	05/12/05	103.27	3.21	1	a			
	8/9/05†	99.68	6.80	1	a			
	11/21/05	98.08	8.40	1	a			
	02/07/06	103.97	2.51		a			

# **Table 1. Water Level Data**

Wiggins Property 3454 Santa Rosa Avenue, Santa Rosa, CA

Well ID	Date	Groundwater Elevation	Depth-to- Water	Top of Casing	Free Product Thickness	Screen Interval	Sand Pack Interval	Bentonite/ Grout Interval
		MSL	feet	bgs		fe	eet	
MW-7	02/02/00*	97.37	8.91	106.28		5'-20'	6'-21.0'	0'-4'
	05/04/00*	100.99	5.29					
	08/03/00*	96.35	9.93					
	04/05/01*	100.92	5.36					
	07/06/01*	96.68	9.60					
	10/08/01*	93.98	12.30					
	01/15/02*	103.63	2.65					
	04/08/02*	101.87	4.41					
	08/15/02*	96.19	10.09					
	11/26/02*	94.83	11.45					
	02/26/03*	103.40	2.88					
	05/20/03*	102.06	4.22					
	09/24/03*	96.28	10.00					
	04/29/04	100.55	5.73		a			
	07/29/04	97.05	9.23		a			
	03/02/05	104.78	1.50		a			
	05/12/05	103.61	2.67		a			
	8/9/05†	99.09	7.19		a			
	11/21/05	97.12	9.16		a			
	02/07/06	104.82	1.46		a			
MW-8	02/02/00*	100.29	6.05	106.34		5'-20'	4'-21.0'	0'-4'
14144-0	05/04/00*	99.69	6.65	100.54		3-20	4-21.0	0-4
	08/03/00*	94.96	11.38					
	12/18/00*	95.38	10.96					
	03/08/01*	102.50	3.84					
	04/05/01*	99.60	6.74					
	07/06/01*	94.95	11.39					
	10/08/01*	91.96	14.38					
	01/15/02*	102.56	3.78					
	04/08/02*	100.39	5.95					
	08/15/02*	94.61	11.73					
	11/26/02*	95.07	11.27					
	02/26/03*	102.78	3.56					
	05/20/03*	100.93	5.41					
	09/24/03*	95.19	11.15					
	03/02/05	104.10	2.24		a			
	05/12/05	102.78	3.56		a			
	8/9/05†	98.55	7.79		a			
	11/21/05	97.06	9.28		a			
	02/07/06	103.57	2.77		a			
MW-9	08/15/02*	94.54	11.20	105.74		5'-20'	4'-20'	0'-4'
11211-2	11/26/02*	95.10	10.64	103.74		3 20	. 20	J 7
	02/26/03*	101.03	4.71					
	05/20/03*	100.69	5.05					
ĺ	09/24/03*	95.13	10.61					
ĺ	04/29/04	99.67	6.07		a			
	07/29/04	96.57	9.17		a			
	03/02/05	102.18	3.56		a			
	05/12/05	101.69	4.05		a			
	8/9/05†	98.57	7.17		a			
	11/21/05	97.62	8.12		a			
	02/07/06	101.83	3.91		a			

#### Table 1. Water Level Data

Wiggins Property

3454 Santa Rosa Avenue, Santa Rosa, CA

Well ID	Date	Groundwater Elevation	Depth-to- Water	Top of Casing	Free Product Thickness	Screen Interval	Sand Pack Interval	Bentonite/ Grout Interval
		MSL	feet	bgs		fe	eet	
MW-10	08/15/02*	94.56	11.30	105.86		5'-20'	4'-20'	0'-4'
	11/26/02*	95.16	10.70					
	2/26/03*	100.89	4.97					
	5/20/03*	98.40	7.46					
	9/24/03*	95.19	10.67					
	04/29/04		<sup>b</sup>		0.05			
	07/29/04		<sup>b</sup>		0.15			
	03/02/05		b		0.02			
	5/12/2005 <sup>c</sup>	101.92	3.94		< 0.02			
	8/9/05† c	98.55	7.31	1	d			
	11/21/05	97.63	8.23		d			
	02/07/06	102.43	3.43		Droplets			
	02/07/00	102.13	3.13	1	Bropiets		ı	
MW-11	08/15/02*	94.53	11.17	105.70		5'-20'	4'-20'	0'-4'
	11/26/02*	95.13	10.57	1				
	02/26/03*	100.85	4.85					
	05/20/03*	100.66	5.04					
	09/24/03*	95.14	10.56					
	04/29/04	99.59	6.11		a			
	07/29/04	96.60	9.10		a			
	03/02/05	102.21	3.49		a			
	05/12/05	101.76	3.94		a			
	8/9/05†	98.56	7.14		a			
	11/21/05	97.63	8.07		a			
	02/07/06	101.63	4.07		a			
MW-12	08/15/02*	94.55	11.28	105.83		5'-20'	4'-20'	0'-4'
	11/26/02*	95.17	10.66					
	02/26/03*	100.87	4.96					
	05/20/03*	100.65	5.18					
	09/24/03*	95.15	10.68					
	04/29/04	99.57	6.26		a			
	07/29/04	96.59	9.24		a			
	03/02/05	102.21	3.62		a			
	05/12/05	101.78	4.05		a			
	8/9/05†	98.49	7.34		a			
	11/21/05	97.55	8.28		a			
	02/07/06	101.68	4.15		a			

#### **Abbreviations:**

MSL = Mean Sea Level

bgs = Below Ground Surface

--- = Not Measured

\* = Historical data collected other consultants, not verified by Winzler & Kelly

 $\dagger$  = The ozone system was started-up on June 7, 2005

a = Free Product Not Present

b = Free Product Present

c = Depth-to-water measured using free product interface meter

# **Table 2. Groundwater Gradient and Flow Direction**

Wiggins Property 3454 Santa Rosa Ave, Santa Rosa, CA

Date	Groundwater Gradient (ft/ft)	Flow Direction	Wells Used for Calculating Gradient and Flow Direction
04/29/04	0.01	Southwest	MW-5, MW-6, MW-7, MW-8, MW-9, MW-10, MW-11, MW-12
07/29/04	0.01	Southwest	MW-5, MW-6, MW-7, MW-8, MW-9, MW-10, MW-11, MW-12
03/02/05	0.02	Southwest	MW-5, MW-6, MW-7, MW-8, MW-9, MW-11, MW-12
05/12/05	0.01	Southwest	MW-5, MW-6, MW-7, MW-8, MW-9, MW-11, MW-12
08/09/05	0.01	Southwest	MW-5, MW-6, MW-7, MW-8, MW-9, MW-10, MW-11, MW-12
11/21/05	*	*	*
02/07/06	*	*	*

# **Notes:**

<sup>\* =</sup> Potentialmetric surface is influenced by ozone and air injections therefore groundwater gradient and flow direction can not be determine.

#### **Table 3. Indicator Parameters**

Wiggins Property 3454 Santa Rosa Avenue, Santa Rosa, CA

Well ID	Sample Date	pН	Temperature (°F)	Conductivity (uS/cm)	ORP (mV)	DO (mg/L)
MW-1 TH	ROUGH MW-4	HAVE BEEN	ABANDONED			
MW-5	04/29/04	6.63	67.28	1317	-38	NM
	07/29/04	6.52	68.90	1265	-101	NM
	03/02/05	6.65	67.64	1416	-14	0.66
	05/12/05	6.65	66.20	1060	144	0.25
	08/09/05†	6.65	69.62	1336	-74	0.34
	11/21/05	7.55	70.70	1330	180	1.05
	02/07/06	6.72	68.00	1386	-1	1.57
MIN	04/20/04	C 40	67.92	770	100	NIM.
MW-6	04/29/04	6.42	67.82	778	180	NM NM
	07/29/04 03/02/05					NM 0.70
	05/02/05					0.70
	08/09/05†					0.09
	11/21/05	6.42	70.52	766	190	1.06
	02/07/06					2.64
	1		•	1		II.
MW-7	04/29/04	6.67	61.70	780	215	NM
	07/29/04					3.45
	05/12/05					1.37
	08/09/05†					0.97
	11/21/05	7.03	63.86	1007	182	1.53
	02/07/06					3.50
MW-8	04/29/04	6.36	59.72	332	-51	NM
IVI VV -0	07/29/04		39.12			NM
	03/02/05					3.05
	05/12/05	6.52	59.36	345	-34	0.22
	08/09/05†	6.59	61.70	387	-76	0.57
	11/21/05	7.01	62.78	431	-52	1.30
	02/07/06	6.64	59.54	426	111	1.91
MW-9	04/29/04	6.81	66.20	443	186	NM
	07/29/04	6.76	66.70	721	199	NM
	03/02/05	6.76	65.30	939	285	1.69
	05/12/05	6.63	68.00	1466	-53	2.41
	08/09/05†	7.07	68.36	704	82	1.01
	11/21/05	7.23	68.18	605	219	1.99
	02/07/06	6.72	65.66	1073	149	1.67
MW-10	04/29/04					NM
212 11 - 10	07/29/04					NM
	03/02/05					NM
	05/12/05	6.59	67.64	973	-82	NM
	08/09/05†	6.81	70.88	894	-42	17.20
	11/21/05	7.29	71.42	947	210	8.30
	02/07/06	6.79	68.36	878	-25	14.94
						1
MW-11	04/29/04	6.84	67.46	867	155	NM
	07/29/04	6.74	67.46	759	194	NM
	03/02/05	6.81	67.46	862	233	0.34
	05/12/05	6.83	67.28	804	117	0.43
	08/09/05†	7.03	68.54	790	50	0.52
	11/21/05	7.14	69.26	763	203	1.34
	02/07/06	6.90	67.82	806	116	1.73

#### **Table 3. Indicator Parameters**

Wiggins Property

3454 Santa Rosa Avenue, Santa Rosa, CA

Well ID	Sample Date	рН	Temperature (°F)	Conductivity (uS/cm)	ORP (mV)	DO (mg/L)
MW-12	04/29/04	6.98	69.62	849	142	NM
	07/29/04	6.85	68.00	881	188	NM
	03/02/05	6.90	68.00	817	229	0.76
	05/12/05	6.95	67.46	772	106	0.35
	08/09/05†	7.14	68.72	809	37	0.35
	11/21/05	7.13	69.80	846	147	1.13
	02/07/06	7.01	68.00	757	123	1.79

#### Abbreviations:

 ${}^{\mathrm{o}}F = degrees$  Fahrenheit

uS/cm = microSiemens per centimeter ORP = Oxidation Reduction Potential

mV = milliVolts

DO = Dissolved Oxygen
mg/L = milligrams per liter
NM = Not Measured
--= Not Sampled

 $\dagger$  = The ozone system was started-up on June 7, 2005

# **Table 4. Analytical Results of Groundwater Samples**Wiggins Property 3454 Santa Rosa Avenue, Santa Rosa, CA

XX/ 11	D. 4	TIPLE C	TIDIT D	TDII MO					EDD	ĺ	TED 4	A CEDE	DIDE	EEDE	T-11	TO G
Well ID	Date Sampled	TPH-G	TPH-D	ТРН-МО	В	T	E	X	EDB	EDC	TBA	MTBE	DIPE	ETBE	TAME	TOG
MW-1 thro	ugh MW-4 l	ave been a	handoned.					ug/L								mg/L
Will the	/ugii 1/1 / 1 / 1	inve been u	bundoneu.													
MW-5			ccessible; well													
			llect sample; P				5.0	20	ND	ND	21	-0.5	l ND	ND	ND	ND
	04/05/01* 07/06/01*	3,300 6,800	170 330	290 250	550 1,700	11 37	56 130	30 71	ND ND	ND 1.8	53	<0.5 <0.5	ND ND	ND ND	ND ND	ND <5.0
	10/08/01*	6,000	550	270	1,400	8.4	88	63	<10	<10	640	<10	ND	ND	ND	<5.0
	01/15/02*	7,800	350	420	2,000	62	170	120	< 5.0	< 5.0	<100	<5.0	<5.0	< 5.0	<5.0	< 5.0
	04/08/02*	1,800	250 a 210**	<200	1,300	4.4 0.42	99 19	6.4	ND	4.6 3.4	ND	<1.0	1.5	ND ND	ND ND	<1.0
	08/15/02* 11/26/02*	2,100 2,200	150**	<100 <100	13	0.42	25	6.2	ND ND	2.5	68 71	<0.5 <b>3.3</b>	<b>0.88</b> ND	ND ND	ND ND	<5.0 <5.0
	02/26/03*	1,100	99 a	<200	4.5	<1.0	29	<1.0	<1.0	3.0	84	<1.0	1.2	<1.0	<1.0	<1.0
	05/20/03*	660	120 a	<200	<1.0	<1.0	2.1	<1.0	<1.0	2.9	<25	<1.0	1.3	<1.0	<1.0	<1.0
	09/24/03*	1,300 870	180 <sup>a</sup>	<200	15.0	<1.0	<b>20</b> <1.0	<1.0	<1.0 <1.0	2.5 1.7	<25	<1.0 <1.0	<1.0 <1.0	<1.0 <1.0	<1.0 <1.0	2.0
	04/29/04 07/29/04	1,100	57 <sup>a</sup> 95 <sup>a</sup>	<200 <200	<1.0 <b>4.8</b>	<1.0 <1.0	3.7	1.6	<1.0	1.7	<25 <25	<1.0	<1.0	<1.0	<1.0	
	03/02/05	750	<50	<200	8.3	1.7	6.6	26	<1.0	1.2	46	<1.0	<1.0	<1.0	<1.0	<1.0 b
	05/12/05	320	54	<200	<1.0 °	<1.0	<1.0	<1.0			<25	<1.0	<1.0	<1.0	<1.0	
	08/09/05†	960	86	<200	3.7	<1.0	1.5	<1.0			<25	<1.0	<1.0	<1.0	<1.0	<1.0
	11/21/05 <sup>1</sup> 02/07/06	690 280	71 a <50	<200 <200	<b>1.9</b> <1.0	<1.0 <1.0	<1.0 1.3	<1.0 <b>2.6</b>			<b>34</b> <25	<1.0 <1.0	<1.0 <1.0	<1.0 <1.0	<1.0 <1.0	<0.5
	02/07/00	200		.200	.1.0	\1.U			l	1					· · · · · · · · · · · · · · · · · · ·	
MW-6			3/8/00 till 8/3/													
	12/18/00*	ND ND	120 ND		ND ND	ND ND	ND ND	ND ND			ND ND	ND ND	ND ND	ND ND	ND ND	
	07/06/01*	<50	<50	<100	<0.3	<0.3	<0.5	<0.5	<0.5	<0.5	<10	<0.5	<0.5	<0.5	<0.5	<5.0
	10/08/01*	<50	<50	<100	<0.3	<0.3	<0.5	<0.5	< 0.5	< 0.5	<10	<0.5	< 0.5	< 0.5	<0.5	<5.0
	01/15/02*	< 50	<50	<100	< 0.3	< 0.3	< 0.5	< 0.5	< 0.5	< 0.5	<10	< 0.5	< 0.5	< 0.5	< 0.5	< 5.0
	04/08/02*	<50	<50 <50	<200	<0.5	<0.5 <0.3	<0.5 <0.5	<1.5 <b>0.80</b>	<1.0 <0.5	<1.0 <0.5	<25 <10	<1.0 <0.5	<1.0 <0.5	<1.0 <0.5	<1.0 <0.5	<1.0 <5.0
	08/15/02* 11/26/02*	<50 <50	<50	<100 <100	<0.3	<0.3	<0.5	0.80	<0.5	<0.5	<10	<0.5	<0.5	<0.5	<0.5	<5.0 <5.0
	02/26/03*	<50	<50	<200	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<25	<1.0	<1.0	<1.0	<1.0	<1.0
	05/20/03*	< 50	<50	<200	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<25	<1.0	<1.0	<1.0	<1.0	<1.0
	09/24/03*	<50	<50	<200	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<25 <25	<1.0	<1.0	<1.0	<1.0	<1.0
	04/29/04 11/21/05†	<50 <50	<50 <50	<200 <200	<1.0 <1.0	<1.0 <1.0	<1.0 <1.0	<1.0 <1.0	<1.0	<1.0	<25 <25	<1.0 <1.0	<1.0 <1.0	<1.0 <1.0	<1.0 <1.0	
MW-7	02/02/00*	ND	ND		ND	ND	ND	ND			ND	ND	ND	ND	ND	
	05/04/00* 08/03/00*	ND ND	ND ND		ND ND	ND ND	ND ND	ND ND			ND ND	8.8 2.0	ND ND	ND ND	ND ND	
			ccessible; well	1			עאו	עאו	1	I	עאו	2.0	שא	שא	עאו	
	04/05/01*	ND	ND	ND	0.88	0.41	1.5	4.0	ND	ND	ND	4.4	ND	ND	ND	ND
	07/06/01*	<50	<50	<100	<0.3	<0.3	<0.5	<0.5	<0.5	<0.5	<10	1.9	<0.5	<0.5	<0.5	<5.0
	10/08/01* 01/15/02*	<50 <50	<50 <50	<100 <100	<0.3	<0.3 <0.3	<0.5 <0.5	<0.5 <0.5	<0.5 <0.5	<0.5 <0.5	<10 <10	1.1 2.7	<0.5 <0.5	<0.5 <0.5	<0.5 <0.5	<5.0 <5.0
			1 4/8/02 till 9/24											_ <0.5	νο.υ	\J.0
	04/29/04	< 50	<50	<200	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<25	<1.0	<1.0	<1.0	<1.0	
	11/21/05†	<50	<50	<200	<1.0	<1.0	<1.0	<1.0			<25	<1.0	<1.0	<1.0	<1.0	
MW-8	Analytical 1	results from	n 02/02/00 till 0	5/04/00 did	not avant	ify petrole	um related	constitue	its above t	he laborate	orv's renor	table dete	ction limits	S.*		
	08/03/00*	50	ND		ND	ND	ND	ND			ND	ND	ND	ND	ND	
	12/18/00*	<50	ND		ND	ND	ND	ND			ND	ND	ND	ND	ND	
	03/08/01*	<50	ND 50		ND r0.2	ND	ND 10.5	ND 10.5			ND	ND 10.5	ND 10.5	ND 10.5	ND 10.5	
	07/06/01* 10/08/01*	<50 <50	<50 <b>71</b>	<100 <100	<0.3	<0.3	<0.5 <0.5	<0.5 <0.5	<0.5 <0.5	<0.5 <0.5	<10 <10	<0.5 <0.5	<0.5 <0.5	<0.5 <0.5	<0.5 <0.5	<5.0 <5.0
	01/15/02*	<50	<50	<100	<0.3	<0.3	<0.5	<0.5	<0.5	<0.5	<10	<0.5	<0.5	<0.5	<0.5	<5.0
	04/08/02*	< 50	<50	<200	< 0.5	< 0.5	< 0.5	<1.5	<1.0	<1.0	<25	<1.0	<1.0	<1.0	<1.0	<1.0
	08/15/02*	<50	97	<100	<0.3	<0.3	<0.5	< 0.5	< 0.5	<0.5	<10	<0.5	<0.5	<0.5	<0.5	<5.0
	11/26/02* 02/26/03*	<50 <50	<b>54</b> <50	<100 <200	<0.3	<0.3 <1.0	<b>0.83</b> <1.0	<b>1.7</b> <1.0	<0.5 <1.0	<0.5 <1.0	<10 <25	<0.5 <1.0	<0.5 <1.0	<0.5 <1.0	<0.5 <1.0	<5.0 <1.0
	05/20/03*	<50	<50	<200	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<25	<1.0	<1.0	<1.0	<1.0	<1.0
	09/24/03*	<50	<50	<200	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<25	<1.0	<1.0	<1.0	<1.0	<1.0
	04/29/04	<50	<50	<200	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<25	<1.0	<1.0	<1.0	<1.0	
	07/29/04 03/02/05															
	05/12/05	<50	<50	<200	<1.0	<1.0	<1.0	<1.0			<25	<1.0	<1.0	<1.0	<1.0	
	08/09/05†	<50	<50	<200	<1.0	<1.0	<1.0	<1.0			<25	<1.0	<1.0	<1.0	<1.0	<1.0
	11/21/05	<50	<50	<200	<1.0	<1.0	<1.0	<1.0			<25	<1.0	<1.0	<1.0	<1.0	< 0.5
	02/07/06	<50	<50	<200	<1.0	<1.0	<1.0	<1.0			<25	<1.0	<1.0	<1.0	<1.0	

# **Table 4. Analytical Results of Groundwater Samples**Wiggins Property 3454 Santa Rosa Avenue, Santa Rosa, CA

Well ID	Date Sampled	трн-G	TPH-D	трн-мо	В	Т	E	X	EDB	EDC	TBA	MTBE	DIPE	ЕТВЕ	TAME	TOG
MW-9	08/15/02*	<i>-5</i> 0	84	-100	-0.2	-0.2	-0.5	ug/L	-0.5	-0.5	-10	-0.5	-0.5	-0.5	< 0.5	mg/L
IVI VV -9	11/26/02*	<50 <50	<50	<100 <100	<0.3	<0.3	<0.5 <0.5	<0.5 <0.5	< 0.5	< 0.5	<10 <10	<0.5 <0.5	<0.5 <0.5	<0.5 <0.5	<0.5	
	02/26/03*	<50	<50													
	05/20/03*	<50	<50	<200 <200	<1.0	<1.0 <1.0	<1.0 <1.0	<1.0 <1.0			<25 <25	<1.0	<1.0 <1.0	<1.0 <1.0	<1.0 <1.0	
	09/24/03*	<50	<50	<200	<1.0	<1.0	<1.0	<1.0			<25	<1.0	<1.0	<1.0	<1.0	
	04/29/04	<50	<50	<200	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<25	<1.0	<1.0	<1.0	<1.0	
	07/29/04	<50	<50	<200	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<25	<1.0	<1.0	<1.0	<1.0	
	03/02/05	<50	<50	<200	<1.0	5.5	2.0	9.8	<1.0	<1.0	<25	<1.0	<1.0	<1.0	<1.0	<1.0
	05/02/05	<50	<50	<200	<1.0	<1.0	<1.0	<1.0			<25	<1.0	<1.0	<1.0	<1.0	
	08/09/05†	<50	<50	<200	<1.0	<1.0	<1.0	<1.0			<25	<1.0	<1.0	<1.0	<1.0	<1.0
	11/21/05	<50	<50	<200	<1.0	<1.0	<1.0	<1.0			<25	<1.0	<1.0	<1.0	<1.0	<0.5
	02/07/06	<50	<50	<200	<1.0	<1.0	<1.0	<1.0			<25	<1.0	<1.0	<1.0	<1.0	
	02/01/00			1200	11.0	1110	1110	1110		l.	120	12.0	(110	11.0	(110	l
MW-10	08/15/02*	32,000	43,000	<1,200	330	460	1,700	4,900	< 50	< 50	<1,000	< 50	< 50	< 50	< 50	
	11/26/02*	31,000	19,000	230 <sup>d</sup>	190	220	1,300	3,400			<100	< 5.0	< 5.0	< 5.0	< 5.0	
	02/26/03*	20,000	19,000 <sup>d</sup>	<2,000	110	140	640	1,370			<250	<10	<10	<10	<10	
	05/20/03*	17,000	< 50	< 200	98	100	670	1,450			<250	<10	<10	<10	<10	
	09/24/03*	22,000	free product	<20,000	87	99	680	1,560			<250	<10	<10	<10	<10	
	04/29/04	Approxima	tely 0.05 feet o	f free produc	t present.											
	07/29/04	Approxima	tely 0.15 feet o	f free produc	t present.											
	03/02/05	Approxima	tely 0.02 feet o	f free produc	t present.											
	05/12/05	8,800	8,000 <sup>d</sup>	<200	55	17	310	426			<250	<10	<10	<10	<10	
	08/09/05†	43,000	10,000	<1,000	48	37	260	573			< 500	<20	<20	<20	<20	150
	11/21/05	6,500	29,000	<2,000	<10	<10	71	236			<250	<10	<10	<10	<10	42
	02/07/06	7,600	77,000	<2,000	<2.5	<2.5	20	77.9			<62	<2.5	<2.5	<2.5	<2.5	
MW-11	08/15/02*	-50	120**	-110	0.42	-0.2	-0.5	-0.5	-0.5	-0.5	-10	-0.5	< 0.5	-0.5	-0.5	1
W1 W - 11	11/26/02*	<50 <50	<50	<110 <100	<0.3	<0.3	<0.5 <0.5	<0.5 <0.5	<0.5	<0.5	<10 <10	<0.5 <0.5	<0.5	<0.5 <0.5	<0.5 <0.5	
	02/26/03*	<50	<50	<200	<1.0	<1.0	<1.0	<1.0			<25	<1.0	<1.0	<1.0	<1.0	
	05/20/03*	<50	<50	<200	<1.0	<1.0	<1.0	<1.0			<25	<1.0	<1.0	<1.0	<1.0	
	09/24/03*	<50	<50	<200	<1.0	<1.0	<1.0	<1.0			<25	<1.0	<1.0	<1.0	<1.0	
	04/29/04	<50	<50	<200	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<25	<1.0	<1.0	<1.0	<1.0	
	07/29/04	<50	<50	<200	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<25	<1.0	<1.0	<1.0	<1.0	
	03/02/05	<50	<50	<200	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<25	<1.0	<1.0	<1.0	<1.0	<1.0
	05/12/05	<50	<50	<200	<1.0	<1.0	<1.0	<1.0			<25	<1.0	<1.0	<1.0	<1.0	
	08/09/05†	< 50	<50	<200	<1.0	<1.0	<1.0	<1.0			<25	<1.0	<1.0	<1.0	<1.0	<1.0
	11/21/05	< 50	< 50	<200	<1.0	<1.0	<1.0	<1.0			<25	<1.0	<1.0	<1.0	<1.0	< 0.5
	02/07/06	< 50	< 50	<200	<1.0	<1.0	<1.0	<1.0			<25	<1.0	<1.0	<1.0	<1.0	
MW-12	08/15/02*	<50	< 50	<100	< 0.3	< 0.3	< 0.5	< 0.5	< 0.5	< 0.5	<10	< 0.5	< 0.5	< 0.5	< 0.5	
	11/26/02*	< 50	<50	<100	< 0.3	< 0.3	< 0.5	< 0.5			<10	< 0.5	< 0.5	< 0.5	< 0.5	
	02/26/03*	< 50	<50	<200	<1.0	<1.0	<1.0	<1.0			<25	<1.0	<1.0	<1.0	<1.0	
	05/20/03*	<50	<50	<200	<1.0	<1.0	<1.0	<1.0			<25	<1.0	<1.0	<1.0	<1.0	
	09/24/03*	<50	<50	<200	<1.0	<1.0	<1.0	<1.0			<25	<1.0	<1.0	<1.0	<1.0	
	04/29/04	<50	<50	<200	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<25	<1.0	<1.0	<1.0	<1.0	
	07/29/04 03/02/05	<50 <50	<50 <50	<200 <200	<1.0 <1.0	<1.0 <1.0	<1.0 <1.0	<1.0 <1.0	<1.0	<1.0 <1.0	<25 <25	<1.0 <1.0	<1.0 <1.0	<1.0 <1.0	<1.0 <1.0	<1.0
	05/02/05	<50	<50	<200	<1.0	<1.0	<1.0	<1.0			<25	<1.0	<1.0	<1.0	<1.0	
	08/09/05†	<50	<50	<200	<1.0	<1.0	<1.0	<1.0			<25	<1.0	<1.0	<1.0	<1.0	<1.0
	11/21/05	<50	<50	<200	<1.0	<1.0	<1.0	<1.0			<25	<1.0	<1.0	<1.0	<1.0	<0.5
	02/07/06	<50	<50	<200	<1.0	<1.0	<1.0	<1.0			<25	<1.0	<1.0	<1.0	<1.0	
	,					,			1		,				,	1
DW-3415	04/29/04	< 50			<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<25	<1.0	<1.0	<1.0	<1.0	
	07/29/04	< 50			<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<25	<1.0	<1.0	<1.0	<1.0	
	03/02/05	< 50			<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<25	<1.0	<1.0	<1.0	<1.0	
	05/12/05	< 50			<1.0	<1.0	<1.0	<1.0			<25	<1.0	<1.0	<1.0	<1.0	
	08/09/05†	< 50			<1.0	<1.0	<1.0	<1.0			<25	<1.0	<1.0	<1.0	<1.0	
	11/21/05	< 50			<1.0	<1.0	<1.0	<1.0			<25	<1.0	<1.0	<1.0	<1.0	
	02/07/06	< 50			<1.0 g	<1.0	<1.0	<1.0			<25	<1.0	<1.0	<1.0	<1.0	
	T	1		, , , , , , , , , , , , , , , , , , ,		1 .					1		1			1
DW-3455	04/29/04	<50			<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<25	<1.0	<1.0	<1.0	<1.0	
	07/29/04	<50			<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<25	<1.0	<1.0	<1.0	<1.0	
	03/02/05	<50			<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<25	<1.0	<1.0	<1.0	<1.0	
	08/09/05†	<50			<1.0	<1.0	<1.0	<1.0			<25	<1.0	<1.0	<1.0	<1.0	
	11/21/05	< 50			<1.0	<1.0 <1.0	<1.0 <1.0	<1.0 <1.0			<25 <25	<1.0 <1.0	<1.0 <1.0	<1.0	<1.0	
	02/07/06	< 50			<1.0									<1.0	<1.0	

#### **Table 4. Analytical Results of Groundwater Samples**

Wiggins Property

3454 Santa Rosa Avenue, Santa Rosa, CA

Well	Date	TPH-G	TPH-D	ТРН-МО	В	T	E	X	EDB	EDC	TBA	MTBE	DIPE	ETBE	TAME	TOG
ID	Sampled			1				ug/L								mg/L
DW-3450	05/06/04	< 50			<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<25	<1.0	<1.0	<1.0	<1.0	
	07/29/04	< 50			<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<25	<1.0	<1.0	<1.0	<1.0	
	03/02/05	< 50			<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<25	<1.0	<1.0	<1.0	<1.0	
	05/12/05	< 50			<1.0	<1.0	<1.0	<1.0			<25	<1.0	<1.0	<1.0	<1.0	
	8/9/05†	< 50			<1.0	<1.0	<1.0	<1.0			<25	<1.0	<1.0	<1.0	<1.0	
	11/21/05 <sup>e</sup>	< 50			<1.0	<1.0	<1.0	<1.0			<25	<1.0	<1.0	<1.0	<1.0	
	02/07/06	< 50			<1.0	<1.0	<1.0	<1.0			<25	<1.0	<1.0	<1.0	<1.0	
DW-3521	05/06/04	< 50			<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<25	<1.0	<1.0	<1.0	<1.0	
	07/29/04	< 50			<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<25	<1.0	<1.0	<1.0	<1.0	
	03/02/05	< 50			<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<25	<1.0	<1.0	<1.0	<1.0	
	05/12/05	< 50			<1.0	<1.0	<1.0	<1.0			<25	<1.0	<1.0	<1.0	<1.0	
	8/9/05†	< 50			<1.0	<1.0	<1.0	<1.0			<25	<1.0	<1.0	<1.0	<1.0	
	11/21/05	< 50			<1.0	<1.0	<1.0	<1.0			<25	<1.0	<1.0	<1.0	<1.0	
	02/07/06	< 50			<1.0	<1.0	<1.0	<1.0			<25	<1.0	<1.0	<1.0	<1.0	

#### Notes:

- \* = Historical analytical data from other consultants.
- \*\* = According to the laboratory, the sample does not display a fuel pattern.
- a = The chromatogram does not exhibit a chromatographic pattern characteristic of diesel. Higher boiling point constituents of weathered gasoline are present.
- b = The laboratory's reportable detection limit was increased slightly due to limited sample volume.
- c = The following additional compound was detected: 1,2-dichloroethane (1.0 ug/L)
- $d = The \ sample \ chromatogram \ exhibits \ a \ pattern \ that \ suggests \ both \ weathered \ gasoline \ and \ diesel \ are \ simultaneously \ present.$
- $e = The \ following \ additional \ compound \ was \ detected: 1,2-dichloroethane \ (0.38 \ ug/L)$
- f = The following additional compound was detected: 1,2-dichloroethane (1.5 ug/L)
- g = The following additional compound was detected: Dichlorodifluoromethane (2.6 ug/L)
- --- = Not analyzed
- $\dagger$  = The ozone system was started-up on June 7, 2005.
- <50 = Analyte not detected at indicated detection limit.
- ND = Analyte not detected above detection limit.

#### Abbreviations:

TPH-G = Total petroleum hydrocarbons as gasoline TPH-D = Total petroleum hydrocarbons as diesel TPH-MO = Total petroleum hydrocarbons as motor oil

B = Benzene

T = Toluene

E = Ethyl benzene

X = Total xylenes

EDB = 1,2-dibromoethane

EDC = 1,2-dichloroethane

MTBE = Methyl tert-butyl ether

TBA = Tert-butyl alcohol

DIPE = Di-isopropyl ether

ETBE = Ethyl tert-butyl ether TAME = Tert-amyl methyl ether

TOG = Total Oil & Grease

mg/L = milligrams per lite

ug/L = micrograms per liter

#### **Analytical Methods:**

418.1M = EPA Method for TOG5030/8015M = EPA Method for TPH-G

3510/8015M = EPA Method for TPH-D & TPH-MO

8260B = EPA Method for BTEX, oxygenates,

and lead scavengers

#### **Table 5. Additional Groundwater Analytical Results**

Wiggins Property

3454 Santa Rosa Avenue, Santa Rosa, CA

Well ID	Sample Date	Acetone	Hexavalent Chromium (CR <sup>+6</sup> )	Bromate (BrO <sub>3</sub> <sup>-1</sup> )	Bromide (Br <sup>-1</sup> )	Molybdenu m (Mo)	Selenium (Se)	Vanadium (V)
		ug/L			m	g/L		
	05/12/05	<1.0	<0.005 a	<0.015 b	0.32	< 0.05	< 0.005	< 0.05
MW-5	08/09/05†	<1.0	<0.005 a	<0.015 b	0.36	< 0.05	< 0.005	< 0.05
IVI VV -3	11/21/05	<1.0	<0.005 a	<0.015 b	0.44	< 0.05	< 0.005	< 0.05
	02/07/06	<1.0	<0.005 a	<0.025 b	0.19	< 0.05	< 0.005	< 0.05
	05/12/05	<1.0	<0.005 <sup>a</sup>	<0.015 b	0.14	< 0.05	< 0.005	< 0.05
MW-8	08/09/05†	<1.0	<0.005 <sup>a</sup>	<0.015 b	0.086	< 0.05	< 0.005	< 0.05
1,1,1,1	11/21/05	<1.0	<0.005 a	<0.015 b	0.12	< 0.05	< 0.005	< 0.05
	02/07/06	<1.0	<0.005 a	< 0.01	0.088	< 0.05	< 0.005	< 0.05
				,		1		,
	05/12/05	<1.0	<0.005 a	<0.015 b	0.30	< 0.05	< 0.005	< 0.05
MW-9	08/09/05†	<1.0	<0.005 a	<0.015 b	0.14	< 0.05	< 0.005	< 0.05
	11/21/05	<1.0	<0.005 a	<0.015 b	0.10	< 0.05	< 0.005	< 0.05
	02/07/06	<1.0	<0.005 a	<0.025 b	0.33	< 0.05	< 0.005	< 0.05
	05/12/05	1.0		b	2.44	0.07	0.005	0.07
	05/12/05	<10	<0.005 <sup>a</sup>	<0.015 b	0.41	<0.05	<0.005	<0.05
MW-10	08/09/05†	<20	<0.005 <sup>a</sup>	<0.015 b	0.56	<0.05	<0.005	<0.05
	11/21/05	<10	<0.005 a	<0.015 b	0.34	<0.05	<0.005	<0.05
	02/07/06	<2.5	<0.005 a	<0.025 b	0.22	< 0.05	< 0.005	< 0.05
	05/12/05	<1.0	<0.005 a	-0.015 b	0.25	< 0.05	< 0.005	< 0.05
<b> </b>	08/09/05†	<1.0	<0.005 a	<0.015 <sup>b</sup>	0.19	<0.05	<0.005	<0.05
MW-11	11/21/05	<1.0		<0.015 b	0.19	<0.05	<0.005	<0.05
<b> </b>		<1.0	<0.005 <sup>a</sup>		0.19			<0.05
	02/07/06	<1.0	<0.005 a	< 0.01	U.1 /	< 0.05	< 0.005	<0.03
	05/12/05	<1.0	<0.005 a	<0.015 b	0.24	< 0.05	< 0.005	< 0.05
<b> </b>	08/09/05†	<1.0	<0.005 <sup>a</sup>	<0.015 b	0.33	<0.05	<0.005	<0.05
MW-12	11/21/05	<1.0	<0.005 <sup>a</sup>	<0.015 b	0.29	<0.05	<0.005	<0.05
	02/07/06	<1.0	<0.005 <sup>a</sup>	<0.015 b	0.15	<0.05	<0.005	<0.05

#### **Notes:**

- --- = Not analyzed
- a = The specific analysis for hexavalent chromium performed within 24 hours yielded a detection limit of 0.010 mg/L. Subsequent and separate analysis for total chromium using Zeeman graphite furnace (EPA 200.9) or ICP (EPA 6010) resulted in no detection of chromium at a detection limit well above 0.005 mg/L. Hexavalent chromium is not present at the level of 0.005 mg/L.
- b = The sample required a dilution due to a sample matrix interference. The dilution resulted in a slight increase in the reported detection limit.
- $\dagger$  = The ozone system was started-up on June 7, 2005.



#### WINZLER & KELLY CONSULTING ENGINEERS

# Site-Specific Groundwater Sampling Procedures Wiggins Property 3454 Santa Rosa Avenue Santa Rosa, California February 7, 2006

#### 1. Objective

Collect representative water level data and groundwater samples.

#### 2. Background

Based on the analytical results of the previous sampling, field work proceeded from the monitoring wells in which the samples collected had the lowest concentrations of constituents to the wells that had the highest concentrations of constituents.

#### 3. Personnel Required and Responsibilities

<u>Winzler & Kelly Technicians</u>: Pon Xayasaeng and Brian Bacciarini performed groundwater monitoring and sampling activities in accordance with the procedures outlined below.

#### 4. Procedures

#### 4a. Decontamination Procedures

- The wash and rinse buckets, the ES-60 purger pump, and the water level meter were decontaminated using alconox soap and potable water.
- The pump and water level meter were decontaminated following use in each well.
- Nitrile gloves were worn by the sampler at all times and changed after handling equipment and instruments.

#### 4b. Calibration Procedures

- The Ultrameter was calibrated for conductivity and pH. Temperature calibration is not necessary in the Ultrameter.
- Conductivity was calibrated using KCl-7000 standard solution within its expiration date.
- The calibration for pH included "zeroing" the Ultrameter with a pH 7 buffer solution followed by adjusting the gain with acid and base buffers (4.00 and 10.00).

#### 4c. Groundwater Elevations

- All monitoring wells were opened and expandable caps removed.
- Each well was allowed to equilibrate to atmospheric pressure for at least 30 minutes.

- An electronic water level meter was used to measure the depth-to-groundwater in each monitoring well while the ozone system was operating.
- The depth, time, and visual observations regarding well access, condition, security, etc., were recorded on a Water Level Data Sheet.

#### 4d. DO Concentrations

- The membrane on the YSI Model 55 DO meter was checked for the presence of bubbles and wrinkles, neither of which was observed.
- The meter was calibrated in the field prior to collecting measurements.
- Using the calibrated YSI Model 55 DO Meter, DO concentrations were measured in each monitoring well.

#### 4e. Purging

- The volume of standing water in each monitoring well was calculated using the diameter of the well, the measured depth-to-water and the depth-to-bottom. The volume was recorded on the Well Sampling Data Sheet for each well.
- All wells were purged using an ES-60 purger pump attached to 40-feet of plastic tubing.
- Domestic wells were purged by running the tap closest to the well and until the well pump switched on.
- During purging of monitoring wells, the parameters of conductivity, pH, temperature, and oxidation-reduction potential were monitored using the Ultrameter at each well casing interval. Visual observations of color/odor/turbidity were also monitored.
- The time, readings, and visual comments were recorded on the Well Sampling Data Sheet.
- Each monitoring well was purged a minimum of three casing volumes, or until the indicator parameters stabilized.
- Purge and decontamination water was transferred to 55-gallon drums labeled and stored on site.

#### 4f. Groundwater Sample Collection

- Groundwater samples were collected by lowering previously unused, disposable, polyethylene, bottom-filling bailers into the well.
- When completely full, the bailer was carefully retracted from the well casing.
- The water was transferred from the bailer to the appropriate certified clean sampling containers.
- Each VOA was immediately capped. The vial was checked for air bubbles by inverting and gently tapping. If any bubbles were visible, a new vial was filled and confirmed to be free of any air bubbles.
- All samples were labeled with the following information:

Sample ID Date and Time Sample Collected

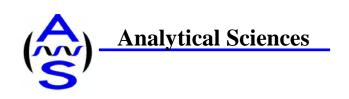
Location Sampler's Initials

- Sample information was documented on a Chain-of-Custody form.
- All samples were placed in an ice chest chilled with ice.
- Upon completion of the sampling activities, each well was closed and secured by replacing the well cap and lock.

#### 5. Equipment Used:

- Disposable gloves
- Potable water
- Alconox soap
- Containers to hold rinsate water
- Scrub Brushes
- Tools to open wells
- Keys to wells
- Water Level Data Form/pencil
- Well Sampling Data Sheet
- Groundwater Sampling Log form
- Water level meter
- YSI Model 55 DO meter
- 12-volt DC 1.5-inch electric submersible pump
- UltraMeter
- Containers to hold extracted water (as required)
- Disposable bailers (previously unused)
- Monofilament nylon line (50-lb test)
- Scissors
- Laboratory supplied sample containers (preserved, as required)
- Sample labels
- Ice chest
- Ice
- Labels/indelible marker
- Trash bags
- 55-gallon drums
- Ziploc bags





Report Date: February 17, 2006

# **Laboratory Report**

Pon Xayasaeng Winzler & Kelly Consulting Engineers 495 Tesconi Circle, Suite 9 Santa Rosa, CA 95401

Project Name: Wiggins 0259805001.32008

Lab Project: **6020708** 

This 25 page report of analytical data has been reviewed and approved for release.

Mark A. Valentini, Ph.D.

Mark A. Valentini

**Laboratory Director** 

P.O. Box 750336 Petaluma, CA 94975-0336 Telephone: (707) 769-3128



Lab Project#: 6020708

# **TPH Gasoline in Water**

Lab#	Sample ID	Compound Name		Result (ug/L)	RDL (ug/L)
6020708-01	DW-3450	Gasoline		ND	50
Date Sampled:	02/07/06	Date Analyzed:	02/07/06	QC	Batch: B000604
Date Received:	02/07/06	Method:	EPA 8015M		

# **TPH Gasoline in Water**

Lab#	Sample ID  DW-3415	Compound Name Gasoline		Result (ug/L)	RDL (ug/L) 50
Date Sampled: Date Received:	02/07/06 02/07/06	Date Analyzed:  Method:	02/08/06 EPA 8015M		Batch: B000604

# **TPH Gasoline in Water**

Lab#	Sample ID	Compound Name		Result (ug/L)	RDL (ug/L)	
6020708-03	DW-3455	Gasoline		ND	50	
Date Sampled: Date Received:	02/07/06 02/07/06	Date Analyzed: Method:	02/08/06 EPA 8015M	QCI	Batch: B000604	

## **TPH Gasoline in Water**

Lab# 6020708-04	Sample ID  DW-3521	Compound Name Gasoline		Result (ug/L) ND	RDL (ug/L) 50	_
Date Sampled: Date Received:	02/07/06 02/07/06	Date Analyzed: Method:	02/08/06 EPA 8015M	QCI	Batch: B000604	



# **TPH Gasoline in Water**

Lab#	Sample ID	Compound Name		Result (ug/L)	RDL (ug/L)
6020708-05	MW-8	Gasoline		ND	50
Date Sampled:	02/07/06	Date Analyzed:	02/08/06	QC I	Batch: B000604
Date Received:	02/07/06	Method:	EPA 8015M		

# **TPH Gasoline in Water**

Lab#	Sample ID	Compound Name		Result (ug/L)	RDL (ug/L)
6020708-06	MW-12	Gasoline		ND	50
Date Sampled:	02/07/06	Date Analyzed:	02/08/06	QC :	Batch: B000604
Date Received:	02/07/06	Method:	EPA 8015M		

# **TPH Gasoline in Water**

Lab#	Sample ID	Compound Name		Result (ug/L)	RDL (ug/L)	
6020708-07	MW-11	Gasoline		ND	50	_
Date Sampled: Date Received:	02/07/06 02/07/06	Date Analyzed: Method:	02/08/06 EPA 8015M	QC I	Batch: B000604	

## **TPH Gasoline in Water**

Lab#	Sample ID	Compound Name		Result (ug/L)	RDL (ug/L)
6020708-08	MW-9	Gasoline		ND	50
Date Sampled:	02/07/06	Date Analyzed:	02/08/06	Q	C Batch: B000604
Date Received:	02/07/06	Method:	EPA 8015M		



# **TPH Gasoline in Water**

Lab#	Sample ID	Compound Name		Result (ug/L)	RDL (ug/L)
6020708-09	MW-5	Gasoline		280	50
Date Sampled:	02/07/06	Date Analyzed:	02/08/06	QC I	Batch: B000604
Date Received:	02/07/06	Method:	EPA 8015M		

# **TPH Gasoline in Water**

Lab#	Sample ID	Compound Name		Result (ug/L)	RDL (ug/L)
6020708-10	MW-10	Gasoline	_	7600	250
Date Sampled:	02/07/06	Date Analyzed:	02/08/06	QC	Batch: B000604
Date Received:	02/07/06	Method:	EPA 8015M		

# Volatile Hydrocarbons by GC/MS in Water

Lab#	Sample ID	Compo	und Name		Result (ug/L)	RDL (ug/L)
6020708-01	DW-3450	Benzen	e		ND	1.0
		Toluene	e		ND	1.0
		Ethylbe	enzene		ND	1.0
		m,p-Xy	lene		ND	1.0
		o-Xyler	ne		ND	1.0
		Tertiary	Butyl Alcohol (	ГВА)	ND	25
			tert-Butyl Ether (	MTBE)	ND	1.0
		Di-isopropyl Ether (DIPE)			ND	1.0
		Ethyl te	ert-Butyl Ether (E'	TBE)	ND	1.0
		Tert-Ar	nyl Methyl Ether	(TAME)	ND	1.0
		Aceton	e		ND	1.0
S	Surrogates	Result (ug/L)	% Recove	ery _	Acceptance Range	2 (%)
Dibromofluoro	methane	20.0	100		70-130	
Toluene-d8		20.1	100		70-130	
4-Bromofluoro	benzene	19.9	100		70-130	
Date Sampled:	02/07/06		Date Analyzed:	02/08/06	QC	Batch: B000602
Date Received:	02/07/06		Method:	EPA 8260B		



Lab#	Sample ID	Compo	und Name		Result (u	g/L)	RDL (ug/L)
6020708-02	DW-3415	Benzene	e		ND	(1)	1.0
		Toluene	<b>)</b>		ND		1.0
		Ethylbe	nzene		ND		1.0
		m,p-Xy	lene		ND		1.0
		o-Xylen	ie		ND		1.0
		Tertiary	Butyl Alcohol (7	ГВА)	ND		25
		Methyl	Methyl tert-Butyl Ether (MTBE) Di-isopropyl Ether (DIPE) Ethyl tert-Butyl Ether (ETBE)		ND		1.0
		Di-isopi			ND		1.0
		Ethyl te			ND		1.0
		Tert-An	nyl Methyl Ether	(TAME)	ND		1.0
		Acetone	•		ND		1.0
Su	rrogates	Result (ug/L)	% Recove	ery _	Acceptai	nce Range (%	5)
Dibromofluoron	nethane	19.9	100		7	70-130	
Toluene-d8		20.2	101		7	70-130	
4-Bromofluorob	enzene	20.5	102		7	70-130	
Date Sampled:	02/07/06		Date Analyzed:	02/08/06		QC Bat	tch: B000602
Date Received:	02/07/06		Method:	EPA 8260B			

# **Volatile Hydrocarbons by GC/MS in Water**

Lab#	Sample ID	Compour	nd Name		Result (ug/L)	RDL (ug/L)
6020708-03	DW-3455	Benzene			ND	1.0
		Toluene			ND	1.0
		Ethylben	zene		ND	1.0
		m,p-Xyle	ene		ND	1.0
		o-Xylene	<b>;</b>		ND	1.0
		Tertiary l	Butyl Alcohol (7	ГВА)	ND	25
		Methyl to	ert-Butyl Ether (	MTBE)	ND	1.0
		Di-isopropyl Ether (DIPE) Ethyl tert-Butyl Ether (ETBE)		ND	1.0	
				ND	1.0	
		Tert-Am	yl Methyl Ether	(TAME)	ND	1.0
		Acetone			ND	1.0
Sur	rrogates	Result (ug/L)	% Recove	ery _	Acceptance Range (%	<u>)                                    </u>
Dibromofluorom	ethane	19.9	100		70-130	
Toluene-d8		20.1	100		70-130	
4-Bromofluorobe	enzene	20.0	100		70-130	
Date Sampled:	02/07/06		Date Analyzed:	02/08/06	QC Bat	tch: B000602
Date Received:	02/07/06		Method:	EPA 8260B		



Lab#	Sample ID	Compou	Compound Name		Result (ug/L)	RDL (ug/L)
6020708-04	DW-3521	Benzene	;		ND	1.0
		Toluene			ND	1.0
		Ethylber	Ethylbenzene		ND	1.0
		m,p-Xyl	m,p-Xylene		ND	1.0
		o-Xylen	o-Xylene		ND	1.0
		Tertiary	Tertiary Butyl Alcohol (TBA)		ND	25
		Methyl t	Methyl tert-Butyl Ether (MTBE)		ND	1.0
		Di-isopr	Di-isopropyl Ether (DIPE)		ND	1.0
		Ethyl ter	Ethyl tert-Butyl Ether (ETBE)		ND	1.0
		Tert-Am	yl Methyl Ether	(TAME)	ND	1.0
		Acetone			ND	1.0
Su	rrogates	Result (ug/L)	% Recove	ery _	Acceptance Range (%	6)
Dibromofluoron	nethane	20.2	101		70-130	
Toluene-d8		20.2	101		70-130	
4-Bromofluorob	enzene	20.1	100		70-130	
Date Sampled:	02/07/06		Date Analyzed:	02/08/06	QC Ba	tch: B000602
Date Received:	02/07/06		Method:	EPA 8260B		

# Volatile Hydrocarbons by GC/MS in Water

Lab#	Sample ID	Compound	d Name		Result (ug/L)	RDL (ug/L)
6020708-05	MW-8	Benzene			ND	1.0
		Toluene			ND	1.0
		Ethylbenz	ene		ND	1.0
		m,p-Xyler	ne		ND	1.0
		o-Xylene			ND	1.0
		Tertiary B	Tertiary Butyl Alcohol (TBA) Methyl tert-Butyl Ether (MTBE) Di-isopropyl Ether (DIPE) Ethyl tert-Butyl Ether (ETBE)		ND	25
		Methyl ter			ND	1.0
		Di-isoprop			ND	1.0
		Ethyl tert-			ND	1.0
		Tert-Amy	Methyl Ether	(TAME)	ND	1.0
		Acetone			ND	1.0
Sur	rogates	Result (ug/L)	% Recove	ery _	Acceptance Range (%	)
Dibromofluorom	ethane	20.0	100		70-130	
Toluene-d8		20.0	100		70-130	
4-Bromofluorobe	nzene	20.0	100		70-130	
Date Sampled:	02/07/06	I	Date Analyzed:	02/08/06	QC Bat	rch: B000602
Date Received:	02/07/06	ľ	Method:	EPA 8260B		



Lab#	Sample ID	Compour	Compound Name		Result (ug/L)	RDL (ug/L)
6020708-06	MW-12	Benzene			ND	1.0
		Toluene			ND	1.0
		Ethylbenz	Ethylbenzene		ND	1.0
		m,p-Xyle	m,p-Xylene		ND	1.0
		o-Xylene	o-Xylene		ND	1.0
		Tertiary I	Tertiary Butyl Alcohol (TBA)		ND	25
		Methyl te	Methyl tert-Butyl Ether (MTBE)		ND	1.0
		Di-isopro	pyl Ether (DIPE	E)	ND	1.0
		Ethyl tert	-Butyl Ether (E7	ΓBE)	ND	1.0
		Tert-Amy	l Methyl Ether (	(TAME)	ND	1.0
		Acetone			ND	1.0
Sur	rrogates	Result (ug/L)	% Recove	ery	Acceptance Range (%	6)
Dibromofluorom	nethane	20.0	100		70-130	
Toluene-d8		20.2	101		70-130	
4-Bromofluorobo	enzene	20.1	100		70-130	
Date Sampled:	02/07/06		Date Analyzed:	02/08/06	QC Ba	atch: B000602
Date Received:	02/07/06		Method:	EPA 8260B		

# Volatile Hydrocarbons by GC/MS in Water

Lab#	Sample ID	Compound Name			Result (ug/L)	RDL (ug/L)
6020708-07	MW-11	Benzene			ND	1.0
		Toluene			ND	1.0
		Ethylbenzene			ND	1.0
		m,p-Xylene		ND	1.0	
		o-Xylene	o-Xylene		ND	1.0
		Tertiary 1	Butyl Alcohol (T	BA)	ND	25
		Methyl tert-Butyl Ether (MTBE)			ND	1.0
		Di-isopropyl Ether (DIPE)			ND	1.0
		Ethyl tert-Butyl Ether (ETBE)			ND	1.0
		Tert-Am	yl Methyl Ether	(TAME)	ND	1.0
		Acetone			ND	1.0
Surroga	ntes	Result (ug/L)	lt (ug/L) % Recovery		Acceptance Range (	%)
Dibromofluorometha	ne	20.3	102		70-130	
Toluene-d8		20.2	101		70-130	
4-Bromofluorobenzer	ne	20.2	101		70-130	
Date Sampled: 02/	07/06		Date Analyzed:	02/08/06	QC B	atch: B000602
Date Received: 02/	07/06		Method:	EPA 8260B		



Lab#	Sample ID	Compour	Compound Name		Result (ug/L)	RDL (ug/L)
6020708-08	MW-9	Benzene			ND	1.0
		Toluene			ND	1.0
		Ethylbenz	Ethylbenzene		ND	1.0
		m,p-Xyle	m,p-Xylene		ND	1.0
		o-Xylene	o-Xylene		ND	1.0
		Tertiary E	Tertiary Butyl Alcohol (TBA)		ND	25
		Methyl te	Methyl tert-Butyl Ether (MTBE)		ND	1.0
		Di-isopro	pyl Ether (DIPI	E)	ND	1.0
		Ethyl tert	Ethyl tert-Butyl Ether (ETBE)		ND	1.0
		Tert-Amy	l Methyl Ether	(TAME)	ND	1.0
		Acetone			ND	1.0
Su	rrogates	Result (ug/L)	% Recove	ery	Acceptance Range (9	%)
Dibromofluoron	nethane	19.8	99	_	70-130	
Toluene-d8		20.1	100		70-130	
4-Bromofluorob	enzene	19.8	99		70-130	
Date Sampled:	02/07/06		Date Analyzed:	02/08/06	QC Ba	atch: B000602
Date Received:	02/07/06		Method:	EPA 8260B		

# Volatile Hydrocarbons by GC/MS in Water

Lab#	Sample ID	Compo	Compound Name		Result (ug/L)	RDL (ug/L)
6020708-09	MW-5	Benzen	e		ND	1.0
		Toluene	Toluene		ND	1.0
		Ethylbe	Ethylbenzene		1.3	1.0
		m,p-Xy	m,p-Xylene		1.6	1.0
		o-Xylen	o-Xylene		1.0	1.0
		Tertiary	Tertiary Butyl Alcohol (TBA)		ND	25
		Methyl	tert-Butyl Ether (	MTBE)	ND	1.0
		Di-isop	ropyl Ether (DIPE	Ε)	ND	1.0
		Ethyl te	rt-Butyl Ether (E	ГВЕ)	ND	1.0
		Tert-An	nyl Methyl Ether	(TAME)	ND	1.0
		Acetone	e		ND	1.0
Sur	rrogates	Result (ug/L) % Recovery		ery _	Acceptance Range	(%)
Dibromofluorom	ethane	20.0	100		70-130	
Toluene-d8		20.2	101		70-130	
4-Bromofluorobe	enzene	19.7	98		70-130	
Date Sampled:	02/07/06		Date Analyzed:	02/08/06	QC I	Batch: B000602
Date Received:	02/07/06		Method:	EPA 8260B		



Lab#	Sample ID	Compou	Compound Name		Result (ug/L)	RDL (ug/L)	
6020708-10	MW-10	Benzene			ND	2.5	NT
		Toluene			ND	2.5	
		Ethylben	Ethylbenzene		20	2.5	
		m,p-Xyle	m,p-Xylene		71	2.5	
		o-Xylene	o-Xylene		6.9	2.5	
		Tertiary 1	Butyl Alcohol (7	ГВА)	ND	62	
		Methyl to	ert-Butyl Ether (	MTBE)	ND	2.5	
		Di-isopro	Di-isopropyl Ether (DIPE)		ND	2.5	
		Ethyl ter	Ethyl tert-Butyl Ether (ETBE)		ND	2.5	
		Tert-Am	yl Methyl Ether	(TAME)	ND	2.5	
		Acetone			ND	2.5	
Su	rrogates	Result (ug/L)	% Recove	ery	Acceptance Range (	%)	
Dibromofluoron	nethane	19.7	98		70-130		
Toluene-d8		20.2	101		70-130		
4-Bromofluorob	enzene	20.0	100		70-130		
Date Sampled:	02/07/06		Date Analyzed:	02/08/06	QC B	atch: B000602	
Date Received:	02/07/06		Method:	EPA 8260B			

# **TPH Diesel & Motor Oil in Water**

Lab#	Sample ID	Compound Name		Result (ug/L)	RDL (ug/L)
6020708-05	MW-8	Diesel Motor Oil		ND ND	50 200
Date Sampled: Date Received:	02/07/06 02/07/06	Date Analyzed: Method:	02/15/06 EPA 8015M		QC Batch: B000621

# **TPH Diesel & Motor Oil in Water**

Lab#	Sample ID	Compound Name		Result (ug/	L) RDL (ug/L)
6020708-06	MW-12	Diesel Motor Oil		ND ND	50 200
Date Sampled: Date Received:	02/07/06 02/07/06	Date Analyzed: Method:	02/15/06 EPA 8015M		QC Batch: B000621



# **TPH Diesel & Motor Oil in Water**

Lab#	Sample ID	Compound Name		Result (ug/L)	RDL (ug/L)
6020708-07	MW-11	Diesel Motor Oil		ND ND	50 200
Date Sampled: Date Received:	02/07/06 02/07/06	Date Analyzed: Method:	02/15/06 EPA 8015M		QC Batch: B000621

# **TPH Diesel & Motor Oil in Water**

Lab#	Sample ID	Compound Name		Result (ug/L)	RDL (ug/L)
6020708-08	MW-9	Diesel		ND	50
		Motor Oil		ND	200
Date Sampled:	02/07/06	Date Analyzed:	02/15/06	Q	C Batch: B000621
Date Received:	02/07/06	Method:	EPA 8015M		

# **TPH Diesel & Motor Oil in Water**

Lab#	Sample ID	Compound Name		Result (ug/L)	RDL (ug/L)
6020708-09	MW-5	Diesel		ND	50
		Motor Oil		ND	200
Date Sampled:	02/07/06	Date Analyzed:	02/15/06		QC Batch: B000621
Date Received:	02/07/06	Method:	EPA 8015M		

## **TPH Diesel & Motor Oil in Water**

Lab#	Sample ID	Compound Name	Result (v	ıg/L) RDL (ug/L)
6020708-10	MW-10	Diesel Motor Oil	77000 ND	500 2000
Date Sampled: Date Received:	02/07/06 02/07/06	Date Analyzed: Method:	02/15/06 EPA 8015M	QC Batch: B000631



Lab Project#: 6020708

# **Dissolved Metals in Water**

Lab#	Sample ID	Compound Name		Result (mg/L)	RDL (mg/L)
6020708-05	MW-8	Molybdenum (Mo)		ND	0.050
		Selenium (Se)		ND	0.005
		Vanadium (V)		ND	0.050
Date Sampled:	02/07/06	Date Analyzed:	02/13/06	QC I	Batch: B000573
Date Received:	02/07/06	Method:	EPA 6010B		

### **Dissolved Metals in Water**

Lab#	Sample ID	Compound Name		Result (mg/L)	RDL (mg/L)
6020708-06	MW-12	Molybdenum (Mo)	<u> </u>	ND	0.050
		Selenium (Se)		ND	0.005
		Vanadium (V)		ND	0.050
Date Sampled:	02/07/06	Date Analyzed:	02/13/06	QC	Batch: B000573
Date Received:	02/07/06	Method:	EPA 6010B		

### **Dissolved Metals in Water**

Lab#	Sample ID	Compound Name		Result (mg/L)	RDL (mg/L)
6020708-07	MW-11	Molybdenum (Mo)		ND	0.050
		Selenium (Se)		ND	0.005
		Vanadium (V)		ND	0.050
Date Sampled:	02/07/06	Date Analyzed:	02/13/06		QC Batch: B000573
Date Received:	02/07/06	Method:	EPA 6010B		



### **Dissolved Metals in Water**

Lab#	Sample ID	Compound Name		Result (mg/L)	RDL (mg/L)
6020708-08	MW-9	Molybdenum (Mo)		ND	0.050
		Selenium (Se)		ND	0.005
		Vanadium (V)		ND	0.050
Date Sampled:	02/07/06	Date Analyzed:	02/13/06	QC I	Batch: B000573
Date Received:	02/07/06	Method:	EPA 6010B		

### **Dissolved Metals in Water**

Lab#	Sample ID	Compound Name		Result (mg/L)	RDL (mg/L)
6020708-09	MW-5	Molybdenum (Mo)		ND	0.050
		Selenium (Se)		ND	0.005
		Vanadium (V)		ND	0.050
Date Sampled:	02/07/06	Date Analyzed:	02/13/06	QC	Batch: B000573
Date Received:	02/07/06	Method:	EPA 6010B		

### **Dissolved Metals in Water**

Lab#	Sample ID	Compound Name		Result (mg/L)	RDL (mg/L)
6020708-10	MW-10	Molybdenum (Mo)	_	ND ND	0.050
		Selenium (Se) Vanadium (V)		ND ND	0.005 0.050
Date Sampled:	02/07/06	Date Analyzed:	02/13/06	Q	C Batch: B000573
Date Received:	02/07/06	Method:	EPA 6010B		

# **Bromate in Water**

Lab#	Sample ID	Compound Name		Result (mg/L)	RDL (mg/L)	
6020708-05	MW-8	Bromate		ND	0.010	_
Date Sampled: Date Received:	02/07/06 02/07/06	Date Analyzed: Method:	02/14/06 EPA 300	QC F	eatch: B000613	



Lab Project#: 6020708

# **Bromate in Water**

Lab#	Sample ID	Compound Name		Result	(mg/L)	RDL (mg/L)
6020708-06	MW-12	Bromate		ND	M3	0.025
Date Sampled:	02/07/06	Date Analyzed:	02/14/06		QC	Batch: B000613
Date Received:	02/07/06	Method:	EPA 300			

# **Bromate in Water**

Lab#	Sample ID  MW-11	Compound Name Bromate		Result (mg/L) ND	RDL (mg/L) 0.010
Date Sampled: Date Received:	02/07/06 02/07/06	Date Analyzed: Method:	02/14/06 EPA 300	QC I	Batch: B000613

# **Bromate in Water**

Lab#	Sample ID	Compound Name		Result	(mg/L)	RDL (mg/L)
6020708-08	MW-9	Bromate		ND	M3	0.025
Date Sampled:	02/07/06	Date Analyzed:	02/14/06		QC B	Batch: B000613
Date Received:	02/07/06	Method:	EPA 300			

# **Bromate in Water**

Lab#	Sample ID	Compound Name		Result	(mg/L)	RDL (mg/L)
6020708-09	MW-5	Bromate		ND	M3	0.025
Date Sampled:	02/07/06	Date Analyzed:	02/14/06		QC	Batch: B000613
Date Received:	02/07/06	Method:	EPA 300			



# **Bromate in Water**

Lab#	Sample ID	Compound Name		Result	t (mg/L)	RDL (mg/L)
6020708-10	MW-10	Bromate		ND	M3	0.025
Date Sampled:	02/07/06	Date Analyzed:	02/14/06		QC I	Batch: B000613
Date Received:	02/07/06	Method:	EPA 300			

# **Bromide in Water**

Lab# 6020708-05	Sample ID  MW-8	Compound Name Bromide		Result (mg/L) 0.088	RDL (mg/L) 0.020
Date Sampled: Date Received:	02/07/06 02/07/06	Date Analyzed: Method:	02/14/06 EPA 300.0	QC	Batch: B000613

# **Bromide in Water**

Lab#	Sample ID	Compound Name		Result (mg/L)	RDL (mg/L)	
6020708-06	MW-12	Bromide		0.15	0.020	•
Date Sampled: Date Received:	02/07/06 02/07/06	Date Analyzed: Method:	02/14/06 EPA 300.0	QC	Batch: B000613	

# **Bromide in Water**

Lab# 6020708-07	Sample ID  MW-11	Compound Name Bromide		Result (mg/L) 0.17	RDL (mg/L) 0.020
Date Sampled: Date Received:	02/07/06 02/07/06	Date Analyzed: Method:	02/14/06 EPA 300.0	Qo	C Batch: B000613



# **Bromide in Water**

Lab#	Sample ID	Compound Name		Result (mg/L)	RDL (mg/L)
6020708-08	MW-9	Bromide		0.33	0.020
Date Sampled:	02/07/06	Date Analyzed:	02/14/06	QO	C Batch: B000613
Date Received:	02/07/06	Method:	EPA 300.0		

### **Bromide in Water**

Lab# 6020708-09	Sample ID  MW-5	Compound Name Bromide		Result (mg/L) 0.19	RDL (mg/L) 0.020
Date Sampled: Date Received:	02/07/06 02/07/06	Date Analyzed: Method:	02/14/06 EPA 300.0	QC	Batch: B000613

# **Bromide in Water**

Lab#	Sample ID  MW-10	Compound Name Bromide		Result (mg/L) 0.22	RDL (mg/L) 0.020
Date Sampled: Date Received:	02/07/06 02/07/06	Date Analyzed: Method:	02/14/06 EPA 300.0	QC B	Batch: B000613

# **Hexavalent Chromium in Water**

Lab#	Sample ID	Compound Name		Result	(mg/L)	RDL (mg/L)
6020708-05	MW-8	Hexavalent Chromium		ND	(CL)	0.005
Date Sampled:	02/07/06	Date Analyzed:	02/07/06		QC I	Batch: B000603
Date Received:	02/07/06	Method:	EPA 7196A			



# **Hexavalent Chromium in Water**

Lab#	Sample ID	Compound Name		Result	(mg/L)	RDL (mg/L)
6020708-06	MW-12	Hexavalent Chromium		ND	(CL)	0.005
Date Sampled:	02/07/06	Date Analyzed:	02/07/06		QC B	atch: B000603
Date Received:	02/07/06	Method:	EPA 7196A			

# **Hexavalent Chromium in Water**

Lab#	Sample ID	Compound Name		Result	(mg/L)	RDL (mg/L)	
6020708-07	MW-11	Hexavalent Chromium		ND	(CL)	0.005	•
Date Sampled:	02/07/06	Date Analyzed:	02/07/06		QC E	Batch: B000603	
Date Received:	02/07/06	Method:	EPA 7196A				

# **Hexavalent Chromium in Water**

Lab#	Sample ID	Compound Name		Result	t (mg/L)	RDL (mg/L)	
6020708-08	MW-9	Hexavalent Chromium		ND	(CL)	0.005	_
Date Sampled: Date Received:	02/07/06 02/07/06	Date Analyzed: Method:	02/07/06 EPA 7196A		QC B	eatch: B000603	

# **Hexavalent Chromium in Water**

Lab#	Sample ID	Compound Name		Result	t (mg/L)	RDL (mg/L)	
6020708-09	MW-5	Hexavalent Chromium		ND	(CL)	0.005	_
Date Sampled:	02/07/06	Date Analyzed:	02/07/06		QC I	Batch: B000603	
Date Received:	02/07/06	Method:	EPA 7196A				



# **Hexavalent Chromium in Water**

Lab#	Sample ID	Compound Name		Result	t (mg/L)	RDL (mg/L)
6020708-10	MW-10	Hexavalent Chromium	_	ND	(CL)	0.005
Date Sampled:	02/07/06	Date Analyzed:	02/07/06		QC B	atch: B000603
Date Received:	02/07/06	Method:	EPA 7196A			

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# **Quality Assurance Report**

# **TPH Gasoline in Water**

Analyte	Resul	Reporting lt Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch B000604 - EPA 5030 GC										
Blank (B000604-BLK1)	Prepared & Analyzed: 02/07/06									
Gasoline	ND	50	ug/L							
Matrix Spike (B000604-MS1)		Source: 6020704	<b>-01</b>	Prepared	& Analyz	zed: 02/07	7/06			
Benzene	10.7	0.50	ug/L	10.0	ND	107	70-130			
Toluene	10.8	0.50	ug/L	10.0	ND	108	70-130			
Ethylbenzene	10.7	0.50	ug/L	10.0	ND	107	70-130			
Xylenes	31.1	1.5	ug/L	30.0	ND	104	70-130			
Matrix Spike Dup (B000604-MSD1)		Source: 6020704	<b>-01</b>	Prepared	& Analyz	zed: 02/07	7/06			
Benzene	10.6	0.50	ug/L	10.0	ND	106	70-130	0.9	20	
Toluene	10.6	0.50	ug/L	10.0	ND	106	70-130	2	20	
Ethylbenzene	10.5	0.50	ug/L	10.0	ND	105	70-130	2	20	
Xylenes	31.6	1.5	ug/L	30.0	ND	105	70-130	1	20	

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# Volatile Hydrocarbons by GC/MS in Water

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch B000602 - EPA 5030 GC/MS										
Blank (B000602-BLK1)				Prepared	: 02/07/06	Analyze	ed: 02/08/0	)6		
Benzene	ND	1.0	ug/L							
Γoluene	ND	1.0	ug/L							
Ethylbenzene	ND	1.0	ug/L							
n,p-Xylene	ND	1.0	ug/L							
o-Xylene	ND	1.0	ug/L							
Tertiary Butyl Alcohol (TBA)	ND	25	ug/L							
Methyl tert-Butyl Ether (MTBE)	ND	1.0	ug/L							
Di-isopropyl Ether (DIPE)	ND	1.0	ug/L							
Ethyl tert-Butyl Ether (ETBE)	ND	1.0	ug/L							
Fert-Amyl Methyl Ether (TAME)	ND	1.0	ug/L							
Acetone	ND	1.0	ug/L							
Surrogate: Dibromofluoromethane	20.4		ug/L	20.0		102	70-130			
Surrogate: Toluene-d8	20.0		ug/L	20.0		100	70-130			
Surrogate: 4-Bromofluorobenzene	20.6		ug/L	20.0		103	70-130			
Matrix Spike (B000602-MS1)	So	ource: 6020708	3-02	Prepared	: 02/07/06	Analyze	ed: 02/08/0	)6		
1,1-Dichloroethene (1,1-DCE)	23.1	1.0	ug/L	25.0	ND	92	70-130			
Benzene	24.0	1.0	ug/L	25.0	ND	96	70-130			
Γrichloroethene (TCE)	23.3	1.0	ug/L	25.0	ND	93	70-130			
Γoluene	23.6	1.0	ug/L	25.0	ND	94	70-130			
Chlorobenzene	23.6	1.0	ug/L	25.0	ND	94	70-130			
Surrogate: Dibromofluoromethane	19.6		ug/L	20.0		98	70-130			
Surrogate: Toluene-d8	20.2		ug/L	20.0		101	70-130			
Surrogate: 4-Bromofluorobenzene	20.4		ug/L	20.0		102	70-130			
Matrix Spike Dup (B000602-MSD1)	So	ource: 6020708	3-02	Prepared	: 02/07/06	Analyze	ed: 02/08/0	)6		
1,1-Dichloroethene (1,1-DCE)	23.5	1.0	ug/L	25.0	ND	94	70-130	2	20	
Benzene	24.6	1.0	ug/L	25.0	ND	98	70-130	2	20	
Γrichloroethene (TCE)	23.7	1.0	ug/L	25.0	ND	95	70-130	2	20	
Гoluene	23.8	1.0	ug/L	25.0	ND	95	70-130	1	20	
Chlorobenzene	24.0	1.0	ug/L	25.0	ND	96	70-130	2	20	
Surrogate: Dibromofluoromethane	20.0		ug/L	20.0		100	70-130			
Surrogate: Toluene-d8	20.2		ug/L	20.0		101	70-130			
Surrogate: 4-Bromofluorobenzene	20.2		ug/L	20.0		101	70-130			



# **TPH Diesel & Motor Oil in Water**

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes		
Batch B000621 - EPA 3510C												
Blank (B000621-BLK1)				Prepared	& Analyz	zed: 02/13	3/06					
Diesel	ND	50	ug/L									
Motor Oil	ND	200	ug/L									
LCS (B000621-BS1)				Prepared	& Analyz	zed: 02/13	3/06					
Diesel	2330	50	ug/L	2740		85	65-135					
LCS Dup (B000621-BSD1)				Prepared	& Analyz	zed: 02/13	3/06					
Diesel	2310	50	ug/L	2740		84	65-135	1	30			
Batch B000631 - EPA 3510C												
Blank (B000631-BLK1)				Prepared	& Analyz	zed: 02/15	5/06					
Diesel	ND	50	ug/L	_								
Motor Oil	ND	200	ug/L									
LCS (B000631-BS1)				Prepared	& Analyz	zed: 02/15	5/06					
Diesel	2110	50	ug/L	1820		116	65-135					
LCS Dup (B000631-BSD1)				Prepared & Analyzed: 02/15/06								
Diesel	2230	50	ug/L	1820		123	65-135	6	30			



# **Dissolved Metals in Water**

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch B000573 - EPA 3010A										
Blank (B000573-BLK1)				Prepared:	01/31/06	Analyze	ed: 02/01/0	)6		
Molybdenum (Mo)	ND	0.050	mg/L							
Vanadium (V)	ND	0.050	mg/L							
LCS (B000573-BS1)				Prepared:	01/31/06	Analyze	ed: 02/01/0	)6		
Vanadium (V)	0.490	0.050	mg/L	0.500		98	70-130			
Molybdenum (Mo)	0.477	0.050	mg/L	0.500		95	70-130			
LCS Dup (B000573-BSD1)				Prepared:	01/31/06	Analyze	ed: 02/01/0	)6		
Vanadium (V)	0.486	0.050	mg/L	0.500		97	70-130	1	20	
Molybdenum (Mo)	0.470	0.050	mg/L	0.500		94	70-130	1	20	



# **Bromate in Water**

Analyte	Recult	Reporting	Unite	Spike	Source	%RFC	%REC	RDD	RPD Limit	Notes	
Allaryte	Result	Limit	Units	Level	Result	%REC	Limits	RPD	Limit	Notes	

Batch B000613 - Default Prep GenChem

•			
Blank (B000613-BLK1)		Prepared: 02/09/06 Analyzed: 02/15/06	
Bromate	ND	0.005 mg/L	

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# **Bromide in Water**

		Reporting		Spike	Source		%REC		RPD	
Analyte	Result	Limit	Units	Level	Result	%REC	Limits	RPD	Limit	Notes

Batch B000613 - Default Prep GenChem

•				
Blank (B000613-BLK1)				Prepared: 02/09/06 Analyzed: 02/15/06
Bromide	ND	0.010	mg/L	•

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# **Hexavalent Chromium in Water**

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch B000603 - NO PREP										
Blank (B000603-BLK1)				Prepared	& Analyz	zed: 02/07	7/06			
Hexavalent Chromium	ND	0.005	mg/L							
LCS (B000603-BS1)				Prepared	& Analyz	ed: 02/07	7/06			
Hexavalent Chromium	0.974	0.005	mg/L	1.00		97	70-130			
LCS Dup (B000603-BSD1)	CS <b>Dup</b> ( <b>B000603-BSD1</b> ) Prepared & Analyzed: 02/07/06									
Hexavalent Chromium	0.991	0.005	mg/L	1.00		99	70-130	2	20	



### **Notes and Definitions**

- NT The sample required a dilution due to the presence of significant amounts of non-target compounds. The dilution resulted in an increase in the reported detection limits.
- M3 The sample required a dilution due to a sample matrix interference. The dilution resulted in a slight increase in the reported detection limit.
- (CL) The specific analysis for hexavalent chromium performed within 24 hours yielded a detection limit of 0.010 mg/L. Separate analysis for total chromium using ICP (EPA 6010) resulted in no detection of chromium above 0.005 mg/L.
- (1) The following additional compound was detected: Dichlorodifluoromethane (2.6 ug/l).
- ND Analyte NOT DETECTED at or above the reporting limit
- NR Not Reported
- RPD Relative Percent Difference

Page 25 of 25

Lab Project#: 6020708

CA Lab Accreditation #: 2303



P.O. Box 750336, Petaluma, CA 94975-0336 110 Liberty Street, Petaluma, CA 94952 Analytical Sciences (707) 769-3128 Fax (707) 769-8093 COMPANY NAME: WINZLER & KELLY CONSULTING ENGINEERS

CLIENT INFORMATION

# CHAIN OF CUSTODY

WINZLER & KELLY PROJECT NAME: WINZLER & KELLY PROJECT NAME: WINZLER & WINZLER & KELLY PROJECT NAME:

WINZLER & KELLY PROJECT NUMBER: 0257805001, 320

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T0609700531

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Annual Report Including 4th Quarter

2005

**Document Type:** 

Monitoring Report - Annual

Submittal Type:

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